

A2 1.mid-term – 2020.04.01.

The student acknowledges that he / she has not used a prohibited tool while writing the midterm!

Meaning of letters in the questions:

D Day of birth (1-31)

M Month of birth (1-12)

H Half-year of birth (1: January-June, 2: July-December)

B Birth at the beginning/end in the month (1: 1-15, 2: 16-31)

Questions:

1. Perform the $(\mathbf{X}-3\mathbf{Y}^T)\mathbf{Z}$ matrix operation, where $\mathbf{X} = \begin{bmatrix} 5 & 2 \\ H & 3 \\ -2 & 1 \end{bmatrix}$, $\mathbf{Y} = \begin{bmatrix} -1 & 1 & 1 \\ 0 & -2 & 1 \end{bmatrix}$

and $\mathbf{Z} = \begin{bmatrix} 1 & -1 & B \\ 3 & 0 & -1 \end{bmatrix}$,

2. Determine all the solutions of the following system of equations:

$$\begin{array}{rclcl} -2x & -3y & -2z & = & -13 \\ x & & +(H+3)z & = & B+2 \\ x & +3y & -2z & = & 11 \end{array}$$

3. Find the inverse of the matrix:

$$\begin{bmatrix} 2 & 1 & M \\ 1 & 1 & 0 \\ 3 & 4 & D \end{bmatrix}$$

4. Evaluate the determinant:

$$\begin{vmatrix} 7 & 3 & 3 & 0 \\ 2 & M & 0 & 3 \\ 1 & -1 & 0 & D \\ 2 & 0 & 1 & 1 \end{vmatrix}$$

All question worth 5 points. You need reach at least 6 points to pass.